Gp 1772

#16
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PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Kenichi NAKAMA, *et al.*

Appln. No.: 09/529,990 Group Art Unit: 1772

Confirmation No.: 7259 Examiner: Alicia Ann CHEVALIER

Filed: April 24, 2000 Attorney Docket No.: Q58939

For: MULTILAYER-COATED SUBSTRATE AND PROCESS FOR PRODUCING THE SAME

RESPONSE UNDER 37 C.F.R. § 1.111

Commissioner for Patents
Washington, D.C. 20231

Sir:

Please consider the remarks below in response to the Action mailed November 6, 2002.

Claims 1-18 are all the claims pending in the application.

I. Paragraph Nos. 3-4 and 11: Rejections Under 35 U.S.C. §§ 102 and 102/103

Claims 1, 2, 4, and 6 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent No. 5,212,596 to Andrus ("Andrus").

Claim 5 is rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as allegedly being unpatentable over Andrus.

Applicants' Response

Applicants respectfully traverse.

As described in the present specification, a sol-gel method is used to separately mold layers provisionally to a gel state, and then the gels are superposed on each other (Applicants refer to the description at page 10, lines 14-17 of the specification). The superposed gels are

then heated on a substrate, thereby completing the condensation polymerization of the organopolysiloxane, *i.e.*, thereby completely solidifying the gels (page 10, lines 4-6 of the specification). By pressing the superposed gels against the substrate with the mold for the outermost layer during the reheating, the surface shape of the mold, including projections, can be transferred to the outermost layer, and a multilayer-coated substrate with projections is formed.

As a result, the projections have a reduced dispersion of height and exceedingly high uniformity (paragraph bridging pages 8 and 9 of the specification). Specifically, the dispersion of height of the projections of the outermost layer is 1 μm or less, as recited in present claim 1.

Consequently, the claimed multilayer-coated substrate achieves an exceedingly high performance in respective applications (Applicants refer to page 9, lines 6-12 of the specification). For example, the multilayer-coated substrate can be a planar microlens array which comprises many microlenses having uniformity in performance and exceedingly high accuracy. Alternatively, the multilayer-coated substrate can be a diffraction grating having exceedingly high resolving power.

At page 5, paragraph No. 11 of the Action, the Examiner takes the position that Andrus' disclosure of forming concave and convex shapes of 50 μm or less falls within the claimed "projections having a dispersion of height of 1 μm or less," and thereby anticipates claim 1.

Applicants respectfully disagree.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. The identical invention must be shown in as complete detail as is contained in the claim.[1]

Applying the law to the facts of the present case, Andrus does not disclose the recitation "projections have a dispersion of height of 1 μm or less" in claim 1. Therefore, Andrus does not

[1] *See*, Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631 (Fed. Cir. 1987), MPEP §2131 and Richardson v. Suzuki Motor Co., 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

anticipate claim 1.

In this regard, the recitation "dispersion of height of 1 μm or less" must be clearly understood. Referring to FIG. 3 and the description at page 11, lines 9-16 of the specification, the recitation "dispersion of height" relates to the relative height of the projections. In other words, dispersion of height is the difference in height (L) between any two projections. According to present claim 1, the difference in height between any two projections is 1 μm or less.

Andrus' disclosure at column 6, lines 25-37 relates to the distance *between* two successive ridges or two successive valleys, etc. For example, Andrus' distance of 50 μm or less refers to the distance "b" in Fig. 3.

Andrus is completely silent regarding the dispersion of height of its projections. Thus, Andrus does not *expressly* describe the claimed dispersion of height of 1 micron or less.

Andrus also fails to *inherently* describe the claimed dispersion of height. In this regard, a rejection based on an allegedly inherent element must satisfy the requirement that the prior art *necessarily* possesses the inherent element. Inherency may not be established by probabilities or possibilities.[2]

Applying the law to the facts of the present case, there is clear evidence within Andrus that its projections, *e.g.*, its ridges, do not necessarily possess a dispersion of height of 1 μm or less. Specifically, at column 6, lines 55-58, Andrus discloses that the height of the individual pyramids, cones, and/or ridges may vary uniformly or randomly.

Therefore, as already mentioned, Andrus does not anticipate claim 1, at least for the reason that Andrus does not disclose (expressly or inherently) the recitation "projections have a dispersion of height of 1 μm or less" in claim 1.

[2] *See*, In re Oelrich, 212 USPQ 323, 326 (CCPA 1981) (quoting Hansgirg v. Kemmer, 40 USPQ 665, 667 (CCPA 1939)).

Andrus also fails to suggest, *i.e.*, render obvious, the recitation "projections have a dispersion of height of 1 μm or less" in claim 1.

In this regard, the claimed invention is nonobvious because Andrus fails to recognize that the claimed dispersion of height is a result-effective variable. Although the projections in Andrus may possess a dispersion of height, Andrus fails to measure and disclose the dispersion of height of its projections.

In order to clarify that the claimed invention is nonobvious from the cited art, Applicants respectfully invite the Examiner to compare the facts of the present case with the facts in In re Antonie, 195 USPQ 6, 8 (CCPA 1977).

Applying Antonie to the present case, the relevant issue pertaining to nonobviousness is that Andrus fails to disclose or suggest, and in fact is completely silent to, the fact that

> (a) if the dispersion of height of the projections of an outermost layer of a multilayer-coated substrate is 1 micron or less,

then the multilayer-coated substrate achieves an exceedingly high performance in respective applications, just as the cited art in Antonie, 195 USPQ at 8, failed to disclose or suggest that

> (a') setting the ratio of tank volume to contactor area equal to 0.12 gal· ft^{-2},

served to maximize treatment capacity and maximized the effectiveness of a given contactor.

It must be noted that the cited art in Antonie taught the basic structure of the device claimed by Appellant and included data in an example that was apparently complete except for any discussion of tank volume (*see*, id.). Thus, in Antonie, it was a fact that the tank in the reference had a volume, but the reference did not measure or disclose the tank volume.

The court in Antonie stated that it is impossible to recognize from the cited reference that "treatment capacity" is a function of "tank volume" or the tank volume-to-contactor area ratio. Recognition of this functionality, according to the court, is essential to the obviousness of conducting experiments to determine the value of the "tank volume" ratio which will maximize

treatment capacity" (*see*, Antonie, 195 USPQ 6, 8 (CCPA 1977)). In other words, the invention in Antonie was nonobvious because the cited art failed to disclose or suggest that (a') functioned to maximize treatment capacity and the effectiveness of a given contactor.

Antonie, therefore, clarifies that the presently claimed invention is nonobvious. Andrus' ridges may have a particular dispersion of height, but Andrus does not disclose or suggest the dispersion of height. Thus, the present invention is nonobvious because Andrus fails to disclose or suggest that (a) the dispersion of height of the projections of an outermost layer of a multilayer-coated substrate functions to maximize the performance of the substrate in respective applications, *i.e.*, Andrus fails to recognize that (a) is a result-effective variable.

For the foregoing reasons, Applicants respectfully request that the Examiner reconsider and withdraw these §102 and §102/103 rejections.

II. Paragraph Nos. 6-8: Rejections Under 35 U.S.C. §§ 102, 102/103 and 103

Claims 1-4 and 6-7 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent No. 5,377,044 to Tomono, *et al.* ("Tomono").

Claims 5, 8-11, and 17-18 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as allegedly being unpatentable over Tomono.

Claim 12 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Tomono.

Applicants' Response

Applicants respectfully traverse.

Tomono, like Andrus, is silent with respect to the dispersion of height of its projections. Therefore, Tomono fails to expressly or inherently describe the "dispersion of projection height" feature of the present invention, and Tomono fails to recognize this feature as a result-effective variable.

Accordingly, for the reasons presented above at section I of this Response, Applicants respectfully request that the Examiner reconsider and withdraw these §102, §102/103, and §103 rejections.

The uniqueness of the present invention is further emphasized by the following.

It is described throughout the present specification that the multilayer-coated substrate of the present invention is formed by a sol-gel method.

Tomono, on the other hand, forms a molding that has a surface having projections and recesses by molding a resin that has flowability, using a mold, followed by irradiating with UV rays. Tomono does not relate to a sol-gel method at all.

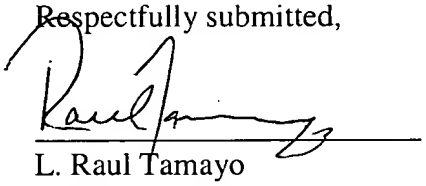
An object of the present invention is to solve problems particular to a sol-gel method. The problems in a sol-gel method involve two points: one is that a thick layer exceeding several microns is not formed by one operation, and another is that because of using polycondensation by hydrolysis of raw materials, shrinkage is liable to occur at curing. The latter problem brings about a problem of dispersion of height of projections (or recesses).

The present invention has been made to overcome this problem.

III. Conclusion

Reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, she is kindly requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,



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